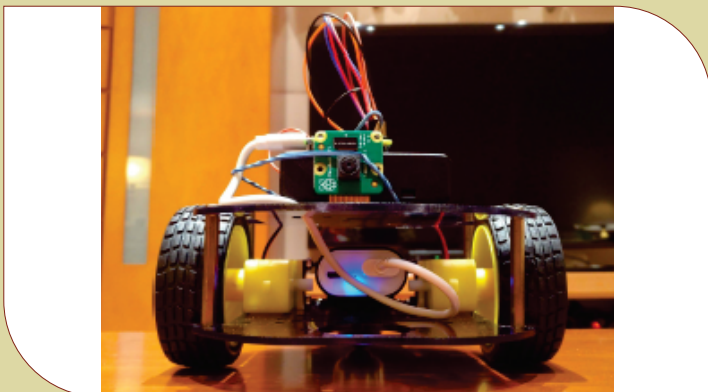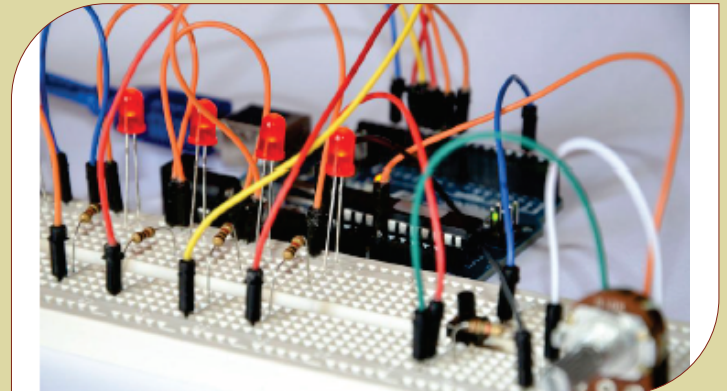**Two Week Online Course**
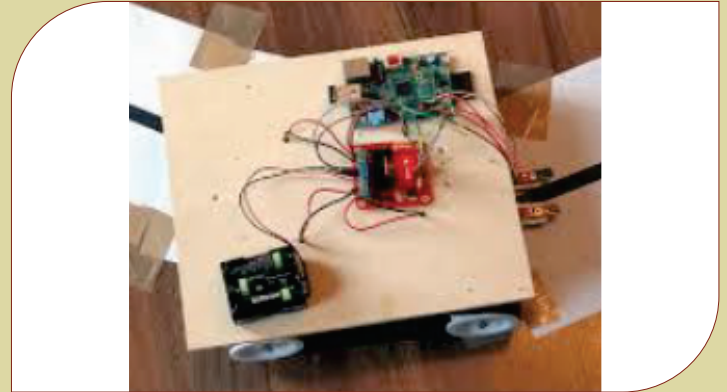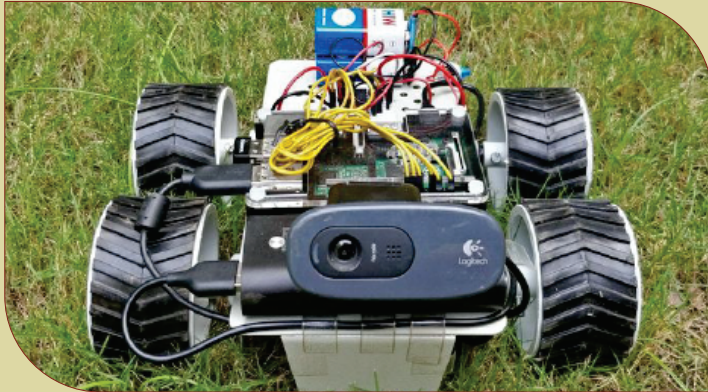**on**
"ADVANCE ROBOT DESIGN IN AGRICULTURE"

18th to 29th October 2021

In Collaboration With
ON MY OWN TECHNOLOGY PVT. LTD. MUMBAI
AND

National Agriculture Higher Education Project
Centre of Excellence : Digital Farming Solutions for Enhancing Productivity by Robots, Drones and AGV's (DFSRDA)
Vasantrao Naik Marathwada Krishi Vidyapeeth, Parbhani (M.S.) INDIA

About University

The Marathwada Krishi Vidyapeeth (Presently renamed as Vasantrao Naik Marathwada Krishi Vidyapeeth) established in 1972 on Land Grant pattern at Parbhani to fulfill the regional aspirations of fields, undertake research and facilitate technology transfer in marathwada region of Maharashtra.

Vasantrao Naik Marathwada Krishi Vidyapeeth (VNMKV) Parbhani, is one of the prestigious agricultural universities in India. Since its inception, it has gained recognition as an innovative organization in the term of education and research in agriculture. It takes care of research and facilitates agriculture technology transfer in marathwada region of Maharashtra .

About Project

The Centre of excellence for Digital Farming solutions for Enhancing Productivity by Robots, Drones and AGV's (DFSRDA) Under Center for Advanced Agricultural Science and Technology (CAAST) is being implemented in Vasantrao Naik Marathwada Krishi Vidyapeeth, Parbhani, Maharashtra under world bank Sponsored National Agricultural Higher Education Project (NAHEP) of Indian Council of Agricultural Research (ICAR), New Delhi, Government of India, Since 2019. The main objective of this center is to train PG/PhD students and faculties about advances in science and technology. The project is proposed on 50:50 cost sharing basis between the World Bank and the Government of India, implemented at VNMKV, Parbhani. Overall, the project aims to establish an advanced basic engineering hardware and software setup such as Mechatronics, CAD/CAM/CAE, 3-D Printers and Instrumentation Laboratories for Agribots, Agri-drones and Agri-AGVs., so that a holistic model can be developed to raise the standard of current agricultural education system that provides more jobs and is entrepreneurship oriented and on par with the global agriculture education standards.

As a part of this project, Centre of excellence for Digital Farming solutions for Enhancing Productivity by Robots, Drones and AGV's (DFSRDA), VNMKV, Parbhani is organizing Two Week Online Course on "Advance Robot Design in Agriculture"

Course Background

A Robotic Design is the creation of a plan or convention for the construction of a robot or a robotic system (as in architectural blueprints, engineering drawing, operation process, circuit diagrams). Design has different connotations in different fields. In some cases the direct construction of an object (as in pottery, engineering, management, graphic design) is also considered to be design.

More formally a robotic design is defined as; (noun) a specification of a robot, manifested by a robot designer, intended to accomplish goals, in a particular robotic environment, using a set of primitive components, satisfying a set of requirements, subject to constraints; (verb, transitive) to create a robotic design, in an robotic environment

This Workshop combines various technical aspects which are used in robot designing and programming. In this course we are focusing on three major aspects - Robot Designing, Electronics and Robot programming. In includes working on various example robots like - Driver chassis, Remote control, Mobile Phone controlling, using sensors etc. This Course is executed with a robotics kit where student executes real projects every class. Students implement & execute electronic circuits aiming to develop and understand concepts of Science, Math, Electronics and Applied physics applied in robotics and automation. In the end students will work on a farming robot made using computer vision for automation in farming.

What you will learn in Advance Robot Design Workshop

Students will understand the basics of robotics and technology that is used in automation like chassis structure, types of robots and their applications.

Transform academic theory and knowledge into exciting and innovative science, physics & technology and robotics projects.

Projects included students making & understanding how applications like controlling autonomous robots, line following robots, Computer vision robots etc.

STEPS OF ROBOT DESIGN PROCESS
1-Define The Problem And Identify The Objectives
2-Research And Brainstorm
3-Build A Prototype
4-Build Your Robot
5-Test Your Robot
6-Go To Step One And Restart

Objectives

1. Learn basics of Robot load design calculations, drive design and chassis design
2. Understanding of Electrical, Electronic Circuit and Robot programming languages
3. Encourage the participants for design and development of conceptual robots in Agricultural field applications

Course Contents

- Session 1- Basics of Robot Design
- Session 2- Load Vs Drive Calculation
- Session 3- Robot Driver Design
- Session 4- Robot Chassis Design
- Session 5- Understanding of Electrical And Electronic Circuit for Robots
- Session 6 & 7- Understanding of Embedded C programming
- Session 8- Project execution - Mobile Phone Controlled Robot
- Session 9 & 10- Usability function Building - Using sensors like Lidar, Ultrasonic, IR Sensors
- Session 11 - 15 - Understanding of Python programming
- Session 16 - 20 - Image Recognition - Final Project on Leaf Tracking Robot

Target Audience

PG, Ph.D. Students, Faculties, Scientists of Vasantrao Naik Marathwada Krishi Vidyapeeth, Parbhani and other Universities, in the area of Agronomy, Horticulture, Extension education, Economics and Agriculture Engineering. etc. Departments are eligible to register and are requested to take advantage of the online training course during this COVID-19 lock down period.

About Selection

1) The Whatsapp Group of the selected candidates will be formed at least one day before the start of the E-cource and the communications regarding the E-cource will be posted in the group.
2) Alternatively Candidates can keep accessing the CAAST-VNMKV website (https://nahep.vnmkv.org.in) regarding the selection, preferable on the day before the start of the seminar.
3) Lead lectures through online platform will be conducted along with online interaction. The link, ID and password for joining the online session will be communicated through Whatsapp group of the selected candidates 30 minutes before the start of the session.
4) Certificates will be issued to those participants only who will complete all online session and assignments.

Training Outcomes

Methodology for conduct of Training

Pre and Post Evaluation: Pre and Post certificate course evaluation will be carried out to evaluate the impact of the certificate course

Conduct of the Certificate Course:

Project Report: The candidates are required to complete the case study based project report and submit it online.

Evaluation : There will be evaluation of the candidates at the end of each week, and a final evaluation towards the end of the course. The evaluation will be in the form of MCQs, descriptive questions, and power point presentations, as the case may be.

Feedback : Candidates need to provide the feedback towards the end of certificate course.

Registration

Duration of E-course:
18ᵗʰ to 29ᵗʰ October, 2021 (Two Weeks)
Registration Fee (Non Refundable):
Course Fee: NO FEES for Student, Faculty & Researchers of VNMKV Parbhani
Rs. 500/- for Student, Faculty & Researchers other than VNMKV Parbhani
International Participant 30 USD
Account Detailes :
Account Name : Comptroller, Vasantrao Naik Marathwada Krishi Vidyapeeth, Parbhani
Account Number : 38639565001
Bank Branch : State Bank of India, Branch: MKV, Parbhani (MS) India.
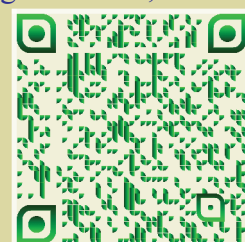**IFSC Code** : SBIN0020317
MICR Code : 431002203

SCAN & PAY

Important Dates:
Interested participants can register on below mentioned link, for the online registration is,
https://bit.ly/39LOvqq

or use QR code provided here.

Last date of registration : October 15, 2021
Confirmation of admission to the candidates:
October 16, 2021
Course Language: English

Two Week Online Course
on
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Patrons

Dr. A. S. Dhawan
Vice-Chancellor
VNMKV, Parbhani

Dr. R. C. Agrawal
National Director
NAHEP, ICAR, New Delhi

Chief Convenors

Dr. D. N. Gokhale
DI & Dean F/A
VNMKV, Parbhani

Dr. Prabhat Kumar
National Co-ordinator
NAHEP, ICAR, New Delhi

Convenor

Dr. G.U. Shinde
Principal Investigator
NAHEP-CAAST-DFSRDA
VNMKV, Parbhani

Organizing Secretary

Er. Khemchand Kapgate
RA, NAHEP,
VNMKV, Parbhani
M. 9403418469

Co-Organizing Secretary

Dr. H. N. Rokade
SRF (SSPN), NAHEP,
VNMKV, Parbhani
M. 9881775095

Training Coordinator

Mr. Raheem Khan
JRF (SSPN), NAHEP,
VNMKV, Parbhani

Er. Tanzeemkhan Pathan
JE (Mech.), NAHEP,
VNMKV, Parbhani